

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
13 October 2005 (13.10.2005)

PCT

(10) International Publication Number  
**WO 2005/095675 A1**

(51) International Patent Classification<sup>7</sup>: **C23F 11/16**,  
C11D 3/00, 3/34, 11/00, C09G 1/02

(21) International Application Number:  
PCT/GB2005/050043

(22) International Filing Date: 24 March 2005 (24.03.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
0407163.5 30 March 2004 (30.03.2004) GB

(71) Applicant (for all designated States except US): **MIDDLESEX SILVER CO. LIMITED** [GB/GB]; Middlesex University, Queensway Enfield, London, Greater London EN3 4SA (GB).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **JOHNS, Peter Gamm** [GB/GB]; 39 Richmond Drive, Watford, Hertfordshire WD17 3BQ (GB). **HARRISON, Clare Elizabeth** [GB/GB]; 23 Salmons Road Edmonton, London, Greater London N9 7JT (GB).

(74) Agent: **LUCAS, Brian, Ronald**; Lucas & Co., 135 Westhall Road, Warlingham, Surrey CR6 9HJ (GB).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Declaration under Rule 4.17:**

— of inventorship (Rule 4.17(iv)) for US only

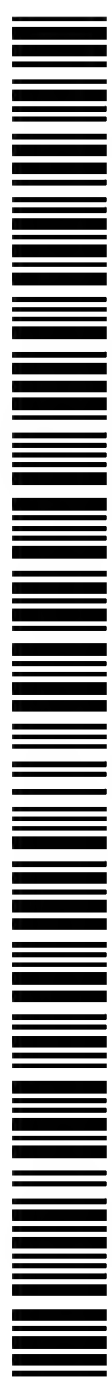
**Published:**

— with international search report  
— with amended claims

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: WATER-BASED METAL TREATMENT COMPOSITION

(57) Abstract: Disclosed for use in treating a metal, *e.g.*, an alloy of silver as aforesaid, is a water-based composition comprising a treatment agent selected from an alkanethiol, alkyl thioglycollate, dialkyl sulfide or dialkyl disulfide and at least one of an amphoteric, nonionic or cationic surfactant in a concentration that is effective to solubilise the treatment agent. Preferably the composition comprises at least a non-ionic relatively hydrophobic surfactant *e.g.* cocamide DEA. The composition is particularly suitable for the treatment of Ag-Cu-Ge alloys.



**WO 2005/095675 A1**